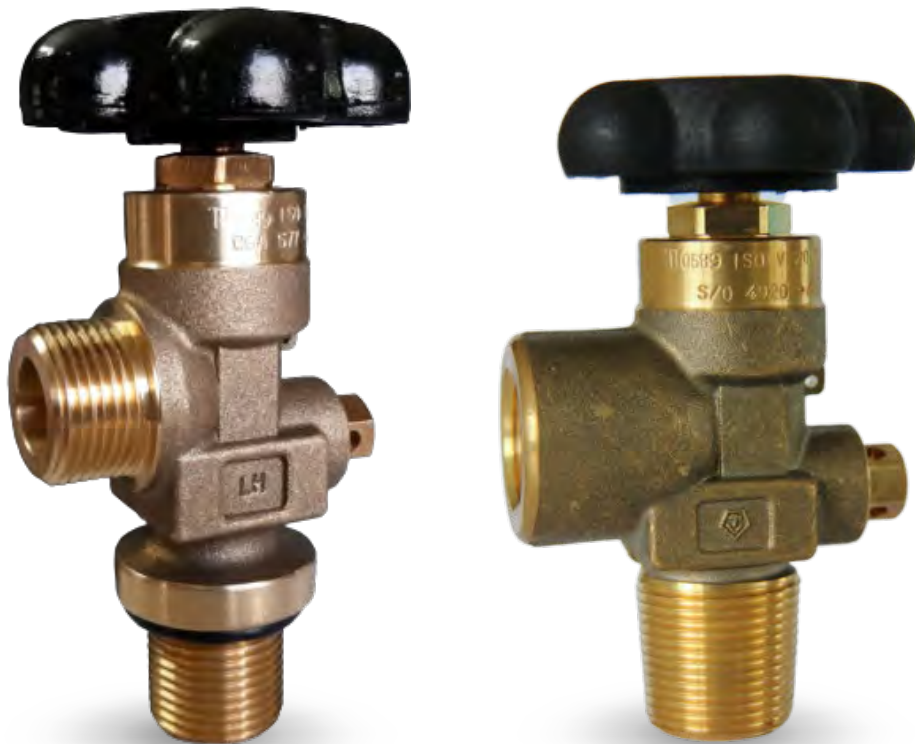




Beyond Compliance...Towards Excellence

Wheel Operated Cylinder Valve in O-ring Seal Design for Industrial Gases

Detailed Series Catalogue



SWN-12/N



Your safety is valued

ISO 9001 & TPED certified valve manufacturer



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Series SWN-12/N

Identifying features

SWN-12/N is new generation handwheel operated O-ring seal valve using two-piece spindle construction suitable for industrial gases excluding Oxygen. The upper & lower spindle interface with a square drive. The threads are located on the lower spindle & the upper spindle is free-floating. The design uses O-ring to create a seal around the upper spindle. PEEK thrust washer is capsuled with the upper spindle & acts as an anti-friction ring when the upper spindle rotates to open & close the valve under high pressure. Leakage past the gland nut metallic sealing is prevented by gland nut O-ring. The lower spindle is manufactured from SS-303 to eliminate the problem of stress corrosion of the spindle skirting associated with brass material in industrial gas mixtures containing Carbon dioxide. It has PA 66/PEEK seat insert to ensure low torque closure.

Recommended opening procedure

It is recommended that the valves always be opened gradually in anticlockwise direction until the required flow is achieved. Opening the valve fully causes the lower spindle to ride upwards on its threads until it contacts the upper spindle. Valves in the fully open position can be mistaken as closed by inexperienced or untrained operators. The operator should always check the valve's position by attempting to close the valve, never by trying to open the valve.

Recommended closing procedure

Close the cylinder valve by rotating the handwheel in the clockwise direction.

Valve installation

Valving procedure & torque guidelines should be as per EN ISO 13341.

For NGT threads, we recommend hand tight + 3 turns wrench tight to install the valve in the cylinders.

Recommended filling procedure

Fully open the valve before commencing gas filling to avoid any pressure shock in the lower spindle assembly.

⚠ CAUTION

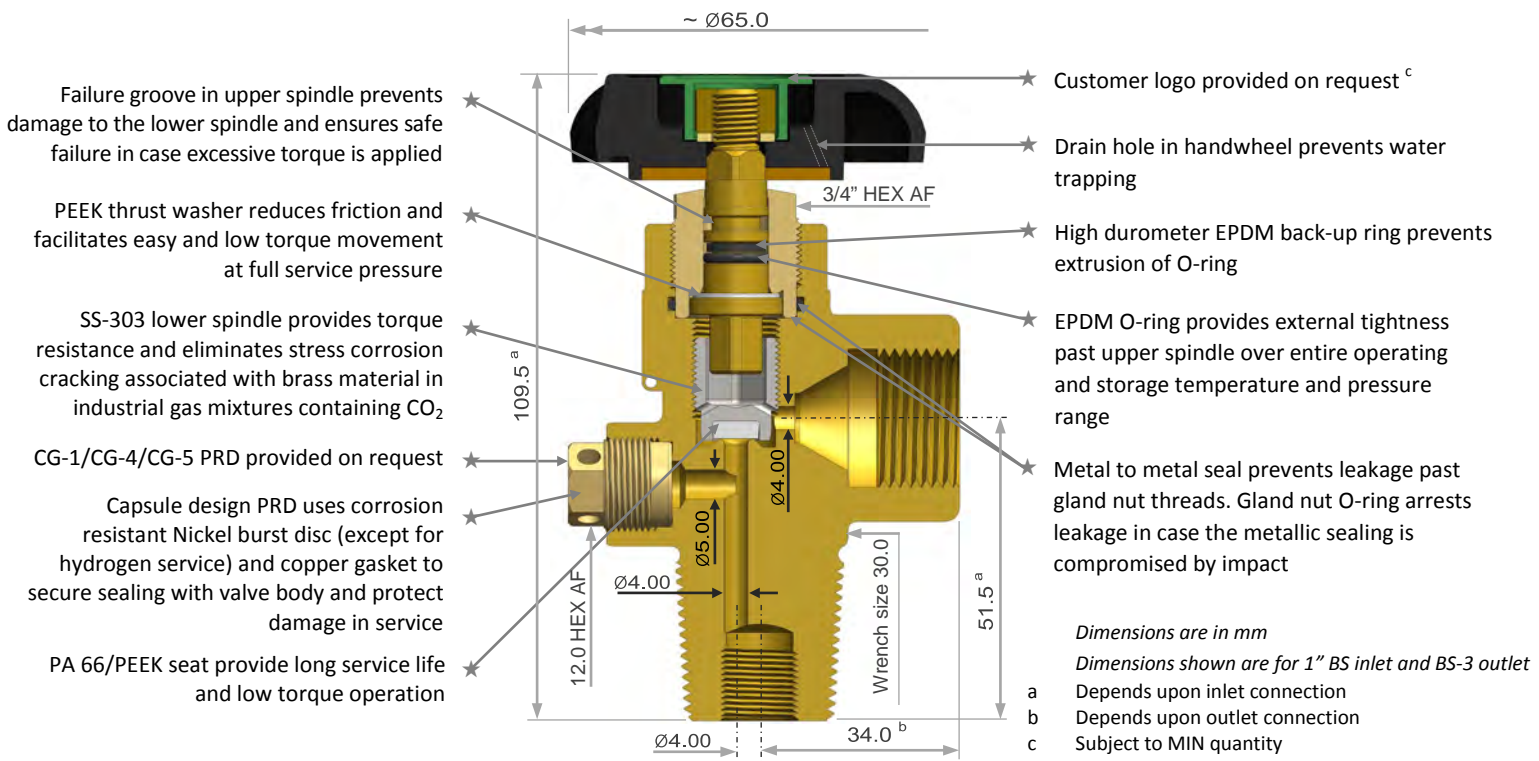
1. NEVER use wrenches or other persuaders to operate the valve.
2. Valving tools (e.g. sockets or jaws) used to screw the valve into the cylinder must only make contact with the flats provided in the valve body & not touching any part of the PRD, if provided. The tools should fit the valve properly without causing damage.
3. Valves should not be over-torqued into the cylinder as it causes high stresses in the cylinder neck, leading to overload failures, especially in parallel thread valves.
4. Proper connectors should be used for filling & discharge, ensuring contact only at the intended sealing surface.
5. As the upper spindle is non-rising, do not over-torque the valve in an open direction.
6. Repair & maintenance should be carried out by trained personnel.



Features & Benefits for Best-in-Class Performance

Series SWN-12/N with Taper Inlet Connection

(Valve shown with standard model)



MAX Pressure Rating & Lubricant Detail

	Metric	English
Working*/Service pressure	300 bar	4350 psig
Test pressure (used for type & production testing)	360 bar	5220 psig
Proof pressure test	900 bar	13050 psig
Hydraulic burst pressure test	1215 bar	17617 psig
Lubricant	Klubertemp GR M30	

* As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications

	Metric	English
Minimum life	2000 cycles	
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Pressure relief device (PRD)	CG-1 / CG-4 / CG-5	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
PRD installation torque	32 Nm	24 ft.lb
Flow coefficient (C _v)	0.36	
Valve inherent strength proven up to [#]		
- with HT brass valve body	83.3 kg	183.6 lb

[#] MAX cylinder package mass for which valve can be used without protection

Testing & Certification

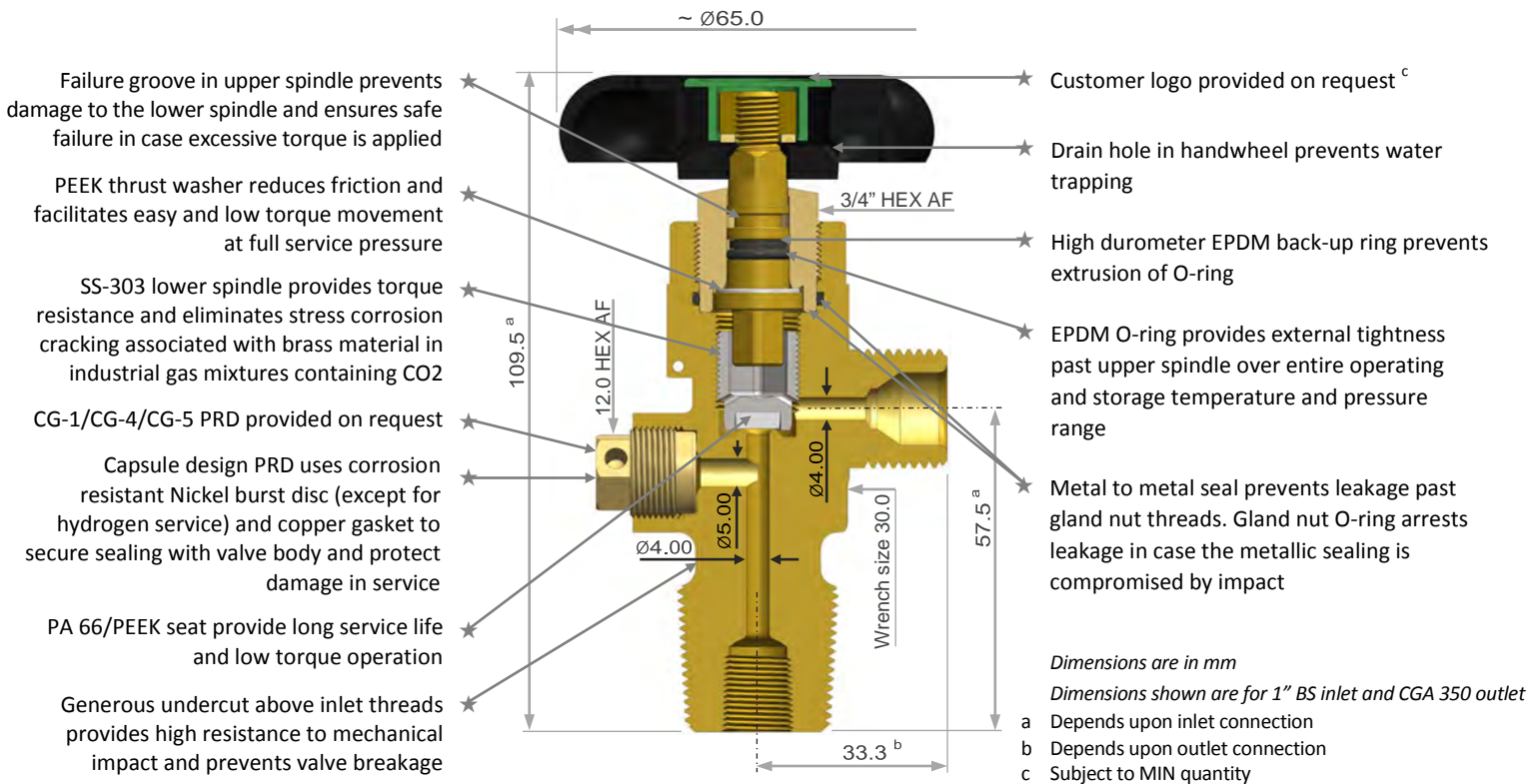
- Valves meet EN ISO 10297:2017 & CGA V-9:2019
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with Π mark
- PRD complies with CGA S-1.1



Features & Benefits for Best-in-Class Performance

Series SWN-12/N with Taper Inlet Connection

(Valve shown with heavy weight model)



MAX Pressure Rating & Lubricant Detail

	Metric	English
Working*/Service pressure	300 bar	4350 psig
Test pressure (used for type & production testing)	360 bar	5220 psig
Proof pressure test	900 bar	13050 psig
Hydraulic burst pressure test	1215 bar	17617 psig
Lubricant	Klubertemp GR M30	


* As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications

	Metric	English
Minimum life	2000 cycles	
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Pressure relief device (PRD)	CG-1 / CG-4 / CG-5	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
PRD installation torque	32 Nm	24 ft.lb
Flow coefficient (C _v)	0.36	
Valve inherent strength proven up to [#]		
- with HT brass valve body	100 kg	220.4 lb

[#] MAX cylinder package mass for which valve can be used without protection

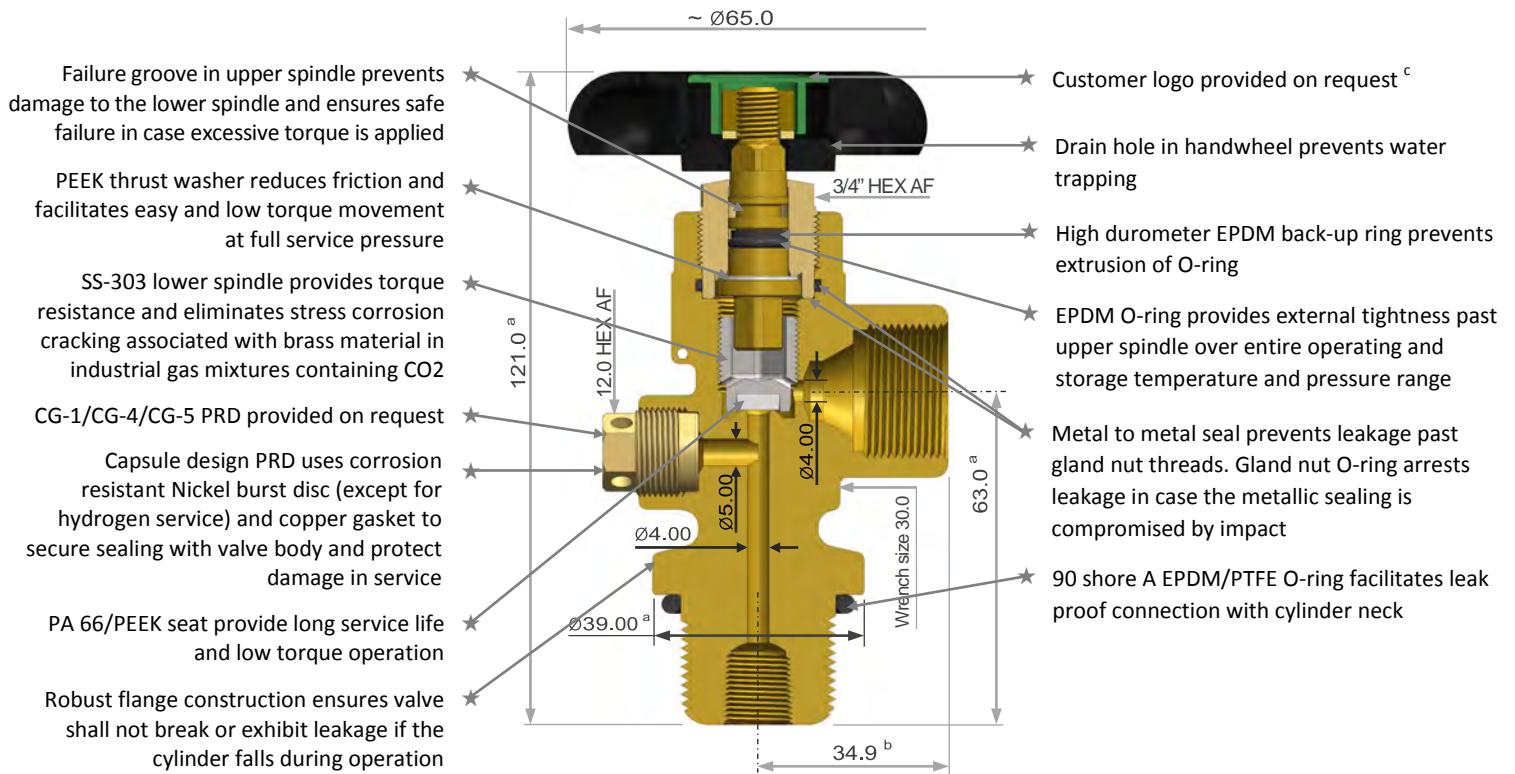
Testing & Certification

- Valves meet EN ISO 10297:2017 & CGA V-9:2019
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  mark
- PRD complies with CGA S-1.1

Features & Benefits for Best-in-Class Performance



Series SWN-12/N with Parallel Inlet Connection



Dimensions are in mm

Dimensions shown are for 1.125"-12UNF-2A inlet and CGA 580 outlet

- a Depends upon inlet connection
- b Depends upon outlet connection
- c Subject to MIN quantity

MAX Pressure Rating & Lubricant Detail

	Metric	English
Working*/Service pressure	300 bar	4350 psig
Test pressure (used for type & production testing)	360 bar	5220 psig
Proof pressure test	900 bar	13050 psig
Hydraulic burst pressure test	1215 bar	17617 psig
Lubricant	Klubertemp GR M30	

* As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications

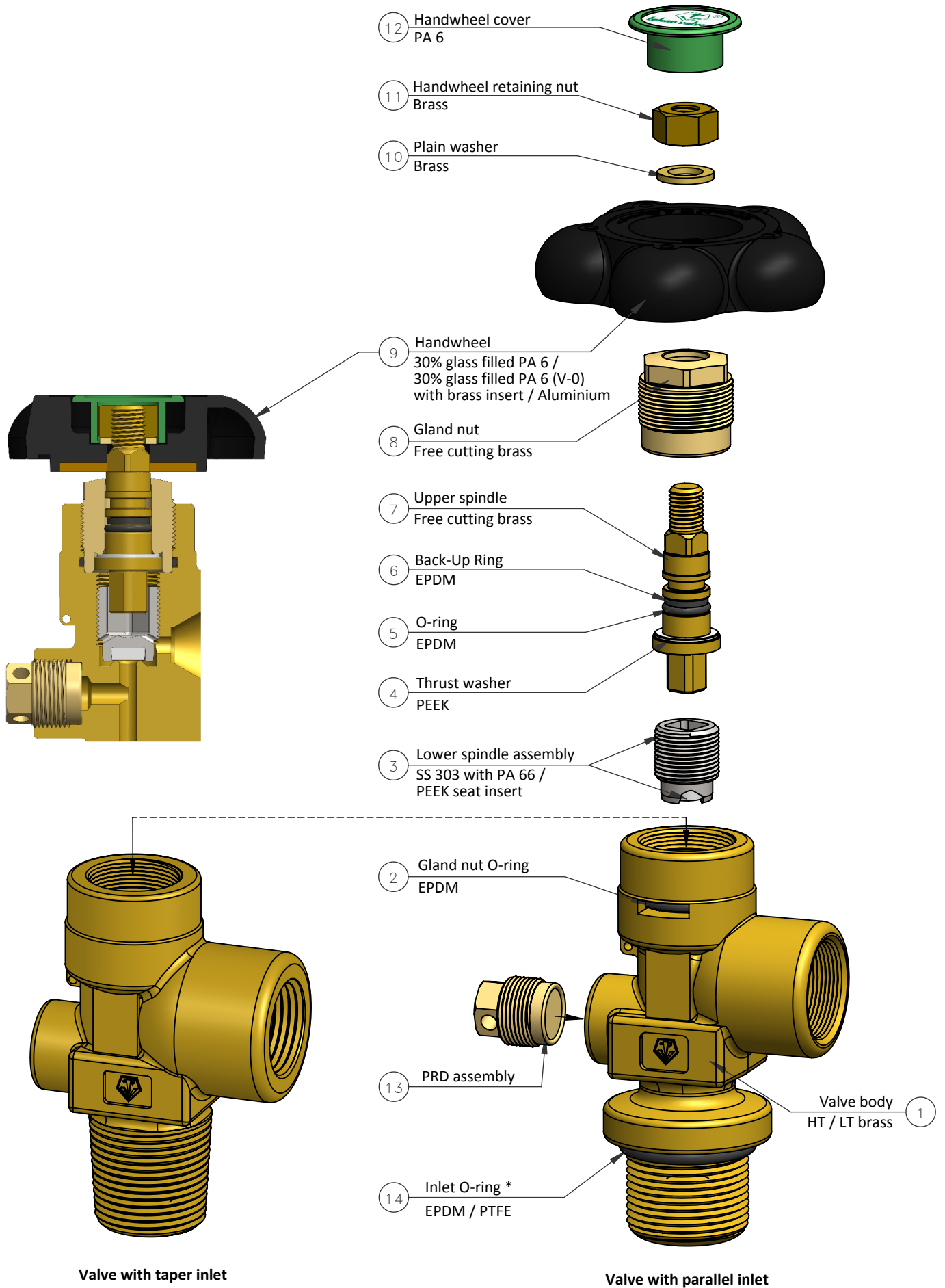
	Metric	English
Minimum life	2000 cycles	
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Pressure relief device (PRD)	CG-1 / CG-4 / CG-5	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
PRD installation torque	32 Nm	24 ft.lb
Flow coefficient (C _v)	0.36	

Testing & Certification

- Valves meet EN ISO 10297:2017 & CGA V-9:2019
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with mark
- PRD complies with CGA S-1.1



Series SWN-12/N



*For parallel inlet connection only



Disassembly, Inspection & Assembly Instructions

Series SWN-12/N

Disassembly of Valve

1. Place the valve assembly after removing from the cylinder in a vice or similar holding fixture. The holding fixture must securely grip the valve body (1) on the wrench flats so that there is no damage to the valve body plating, internal bores & inlet & outlet threads.
2. Remove handwheel cover (12) by pulling it away from the handwheel (9) using a screw driver or similar tool. Use 13 mm socket wrench or HEX box wrench to unscrew the handwheel retaining nut (11) by turning it counter clockwise.
3. Remove the handwheel from the upper spindle (7) square. The handwheel retaining nut & plain washer (10) will come out with the handwheel.
4. Using a 3/4" socket wrench or hex box wrench, unscrew the gland nut (8) in counter clockwise direction. The upper spindle assembly with O-ring (5), back-up ring (6) & thrust washer (4) will remove with the gland nut. Remove the upper spindle assembly from the gland nut by pushing the upper spindle from the top. Be careful not to scratch the gland nut sealing surface.
5. Use the upper spindle to remove the lower spindle assembly (3) from the valve chamber, by rotating it counter clockwise.
6. Remove the PRD (13) by rotating counter clockwise using a 12 mm socket wrench or HEX box wrench. Be careful not to scratch / damage the sealing surface of the PRD with the valve body.

Inspection of Valve & Components

1. Valve body (1)
 - a. Inspect the valve body chamber for dirt, debris or damage. Where possible, blow out the valve body chamber using clean, dry, compressed Air or Nitrogen to remove any foreign particles.
 - b. Inspect the valve body for seat damage & thread wear.
 - c. Inspect if gland nut O-ring (2) is in place inside the valve body groove.
 - d. Do not attempt to repair the valve body if damaged.
2. Components
 - a. Inspect all parts visually for wear, damage. Replace parts as necessary. In case of damage to upper spindle (7) & / or elastomers, replace with new upper spindle subassembly.
 - b. Inspect lower spindle (3) threads & soft seating for any sign of wear / damage. Inspect the thrust washer (4). Replace if necessary.
 - c. Inspect PRD (13) (if installed) for any damage.
 - d. Handwheel (9) should only be reused if in good condition.
 - e. Replace inlet O-ring (14) if valve is removed from the cylinder

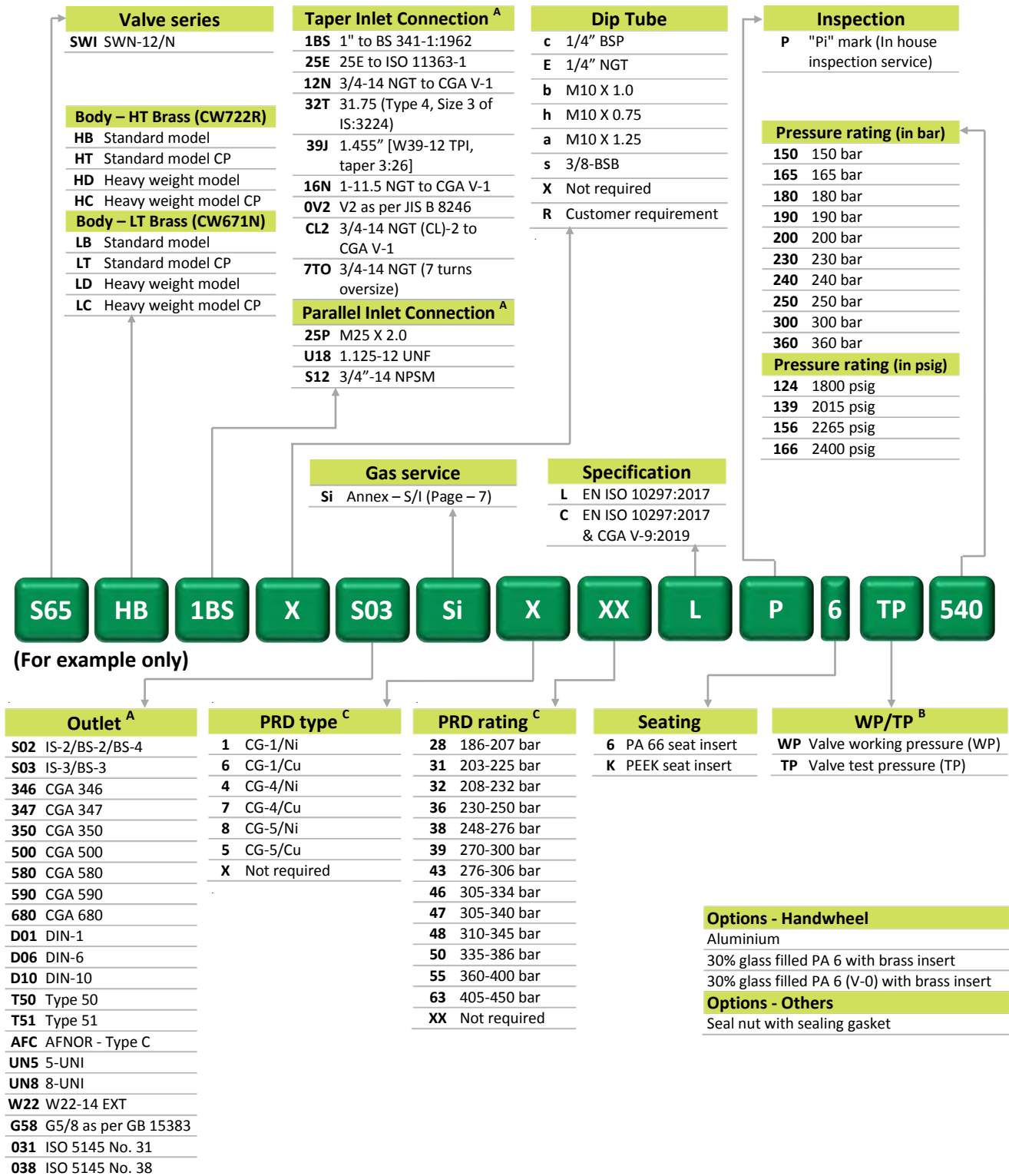
Assembly of Valve

1. Lubricate parts as per GA drawing.
NOTE Customer will receive parts / spare kits in lubricated condition.
2. Push thrust washer (4) to rest inside the upper spindle (7) collar groove.
3. Use special tools to fit O-ring (5) & back-up ring (6) in upper spindle groove. Care should be taken to place the back-up ring above the O-ring in the lower groove.
4. Fit gland nut O-ring (2) inside the groove provided in the valve body (1) just below the gland nut threads.
5. Insert upper spindle subassembly inside gland nut (8) with a twisted motion to avoid damage to elastomers & insert till the spindle collar rests on gland nut counter bore.
6. Place the lower spindle assembly (3) into the valve body. Position the upper spindle to engage with the lower spindle square & screw in gland nut into the valve body by rotating the upper spindle square. This will also drive the lower spindle assembly to rest with the valve body seat.
7. Clamp valve body in bench vice between nylon clamps. Tighten gland nut using a 3/4" socket wrench or hex box wrench at 65 ± 2 Nm in clockwise direction.
8. Place handwheel (9) on the upper spindle square.
9. Fit handwheel by tightening handwheel retaining nut (11) over plain washer (10) using a 13 mm socket wrench or HEX box wrench at 9 ± 1 Nm in clockwise direction.
10. Tighten PRD assembly (13), if provided, using a 12 mm socket wrench or HEX box wrench at 32 ± 1 Nm in clockwise direction.
11. Push fit wheel cover (12) in the handwheel.
12. For parallel inlet connection, fit inlet O-ring (14) so that it rests against the flange.

NOTE Refer "Material of construction & assembly arrangement" page to identify the part No. given in the bracket.



Series SWN-12/N



A - Other inlet & outlet connections are available as per customer requirement
 B - As per EN ISO 10297, the term working pressure (WP) is only applicable for compressed gases and does not apply to liquefied gases. For compressed gas, test pressure = 1.2 x working pressure
 For liquefied gases, test pressure shall be at least equal to the minimum test pressure corresponding to the applicable filling ratio quoted in the relevant transport regulation (ADR) for that gas
 C - CG-4/CG-5 is available for pressure relief device with MAX burst disc set pressure of 300 bar



List of Approved Gases

Gas Annex – S/I

Technical Parameters

MAX working pressure (WP)	: 300 bar
MAX test pressure (TP)	: 360 bar
Lubricant	: Klubertemp GR M30
Soft seat	: PA 66 / PEEK

Sl. No.	UN No.	Name of gas ^a	Chemical formula	Condition	Seat material	
					PA 66	PEEK
01	1002	Air	-	-	✓	✓
02	1006	Argon	Ar	-	✓	✓
03	1016	Carbon monoxide ^{b & c}	CO	A	✓	✓
04	1957	Deuterium	D	-	✓	✓
05	1046	Helium	He	-	✓	✓
06	1049	Hydrogen ^b	H ₂	-	✓	✓
07	1056	Krypton	Kr	-	✓	✓
08	1065	Neon	Ne	-	✓	✓
09	1066	Nitrogen	N ₂	-	✓	✓
10	1080	Sulphur hexafluoride	SF ₆	-	✓	✓
11	2036	Xenon	Xe	-	✓	✓
12	1013	Carbon dioxide	CO ₂	A	✓	✓

a - Valve may also be used for mixtures of the listed gases. PRD, if provided, shall be offered with nickel burst disc unless mentioned otherwise.

b - Valves for hydrogen service, if equipped with PRD, shall be offered with copper burst disc.

c - Valves for carbon monoxide service / carbon monoxide gas mixture shall not be equipped with PRD.

A - Anhydrous (Water content less than 0.01%)

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Last updated: 17th April' 2021

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